

Whittier Landslide - Tsunami Hazard Analysis**FY2012 Request: \$150,000**
Reference No: 54895**AP/AL:** Appropriation**Project Type:** Life / Health / Safety**Category:** Natural Resources**Location:** Whittier**House District:** Chugach State Park (HD 32)**Impact House District:** Chugach State Park (HD 32)**Contact:** Jean Davis**Estimated Project Dates:** 04/15/2012 - 06/30/2013 **Contact Phone:** (907)465-2422**Brief Summary and Statement of Need:**

This supplemental request is for the support of airborne Light Detection and Ranging (LiDar) and field geologic work. During summer 2011, Alaska Division of Geological and Geophysical Surveys (DGGS) scientists identified a large bedrock fracture above the north shore of the Passage Canal fjord near Whittier.

Funding:	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	Total
Gen Fund	\$150,000						\$150,000
Total:	\$150,000	\$0	\$0	\$0	\$0	\$0	\$150,000

<input type="checkbox"/> State Match Required	<input checked="" type="checkbox"/> One-Time Project	<input type="checkbox"/> Phased - new	<input type="checkbox"/> Phased - underway	<input type="checkbox"/> On-Going
0% = Minimum State Match % Required		<input type="checkbox"/> Amendment	<input type="checkbox"/> Mental Health Bill	

Operating & Maintenance Costs:

	<u>Amount</u>	<u>Staff</u>
Project Development:	0	0
Ongoing Operating:	0	0
One-Time Startup:	0	
Totals:	0	0

Additional Information / Prior Funding History:

No prior funding history.

Project Description/Justification:

Steep slopes and dense vegetation prohibit a comprehensive field survey of the fracture. Light Detection and Ranging (LiDar), a high-precision optical remote sensing technology, has the ability to detect subtle topographic features beneath the vegetation canopy. Aerial LiDar acquisition along the north side of Passage Canal, followed by field verification and geologic analysis of the rock slope, would provide important data for tracing the fracture, delineating the detached block, and assessing potential instability of a larger area of the slope. Re-modeling the resulting tsunami on the basis of these data would provide a more reliable estimate of the maximum wave inundation at Whittier.

Funds will be used to determine, as soon as possible, the extent and potential instability of the steep slope opposite Whittier along Passage Canal. The requested funding would support airborne LiDar data collection as soon as snow and weather conditions permit in 2012, followed by geologic field work during the summer 2012 field season, subsequent analysis of the data, and preparation of maps and a report by spring 2013. Additionally, the requested funding could leverage federal matching funds from the U.S. Geological Survey's STATEMAP program. The combined funding would, at no additional cost to the State, expand the project to include detailed (1:63,360-scale) geologic mapping and hazard analysis of the entire southern quarter of the Seward D-5 quadrangle. The map area would extend from the Portage Glacier visitor center on the west to past Shotgun Cove on the east,

including the Whittier access road and railroad tunnel areas where slope instability has been a problem in recent years, and proposed road extension to planned residential subdivisions in the Shotgun Cove area. In addition to analysis of the landslide, tsunami, and other hazards, the report and maps would provide valuable geologic information for land-use planning and facilities design in this critical all-weather port community. Following scientific peer review, results of this project will be shared immediately with the City of Whittier, the state Division of Homeland Security and Emergency Management, Alaska Railroad, and appropriate legislators.

If this project is not funded, the State of Alaska, City of Whittier, Alaska Railroad, and other affected parties will not know the true extent and severity of the potential landslide and tsunami hazard, and will be unable to adequately plan and prepare for the possible consequences.

Why is this Project Needed Now?:

The fracture is mostly obscured by dense vegetation and is only barely visible from the air, mostly in areas of snow-avalanche scars. Consequently, field observations of the extent and depth of the fracture, and thus the total extent and thickness of the potential slide block, are limited and inconclusive. Initial tsunami-wave modeling based on hypothetical failure of the bedrock slope below the fracture and resulting seawater displacement suggest that the tsunami wave would reach Whittier in approximately 1.5 minutes and reach a height of 1.5 m (5 feet) in the Whittier harbor, which could damage boats and injure people in the harbor but would likely not pose serious risks elsewhere in the community. However, until the entire rock slope on the northwest side of Passage Canal is evaluated, the potential for larger tsunami-generating landslides, triggered most likely by one or more earthquakes, remains unknown.

Specific Spending Detail:

Personal services	\$ 53,000	One new long-term non-perm Geologist IV position to serve as project manager.
Travel	23,000	Commercial travel, helicopter support, and local transportation
Services	64,000	Airborne LiDar survey, laboratory analyses
Supplies & equipment	10,000	GIS equipment, software licenses, field and office supplies
TOTAL	\$ 150,000	